



HPC Hydrometeorological Testbed

April 2009



History



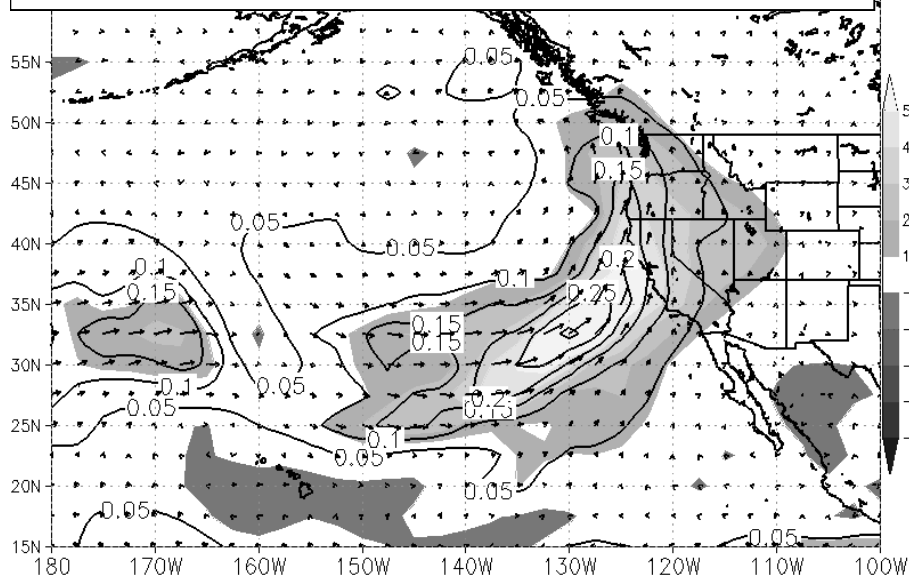
- **Began in August 2005**
 - One part-time contractor position (2 days/week)
 - Wes Junker, long time HPC QPF forecaster
 - Funded through NCEP
- **Focus**
 - Documenting current state of QPF for training
 - Testing new tools for QPF
 - Leveraging results from HMT West
 - Improving HPC QPFs
- **Full time HMT contractor began January 2009**
 - Funded through NCEP and NOAA HMT



Accomplishments

- Updated the HPC heavy rainfall forecasting manual
- Paper – “Use of Normalized Anomaly Fields to Anticipate Extreme Rainfall in the Mountains of Northern California”
 - <http://ams.allenpress.com/archive/1520-0434/23/3/pdf/i1520-0434-23-3-336.pdf>
- Worked with Rich Grumm to extend the normalized anomaly research and to develop a foot-printing technique prototype that can be used by forecasters when a heavy rainfall event threatens the greater San Francisco population area.
- Evaluated and migrated to NCEP computers the Whitaker Hamil reforecast project

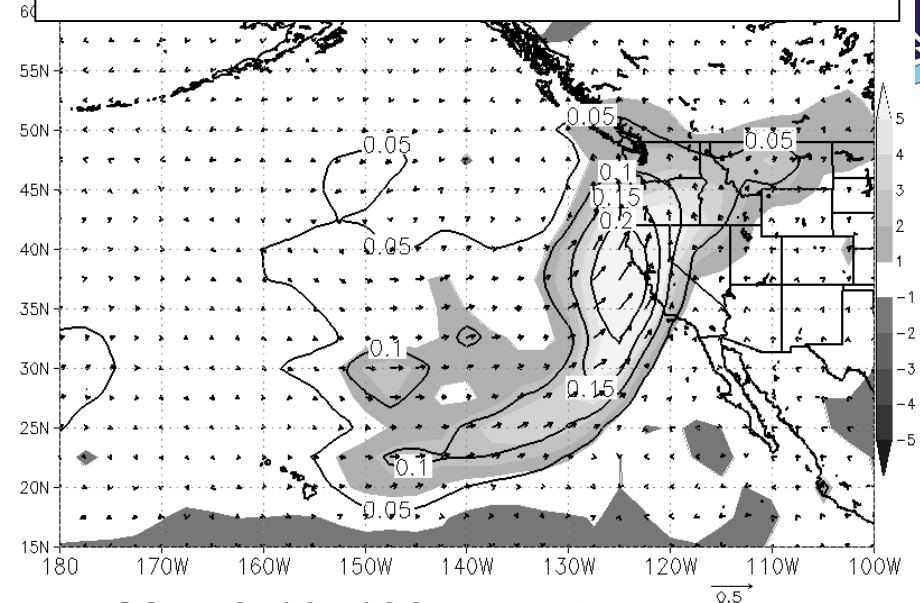
1200 UTC 9 Jan 1995



Jan. 9-10, 1995 event

12Z10JAN1995 850hPa Moisture Flux Magnitude (contour, [kg/kg][m/s]),
Normalized Anomaly (shaded, stddev)

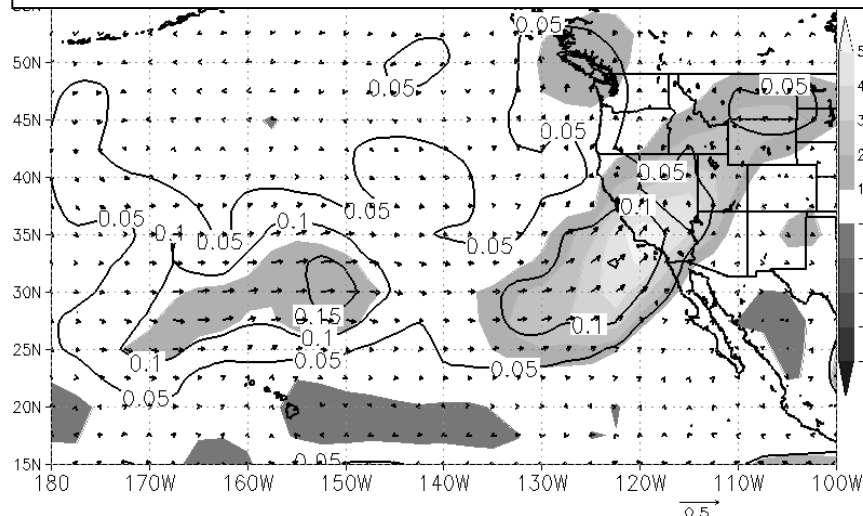
1200 UTC 9 Mar 1995



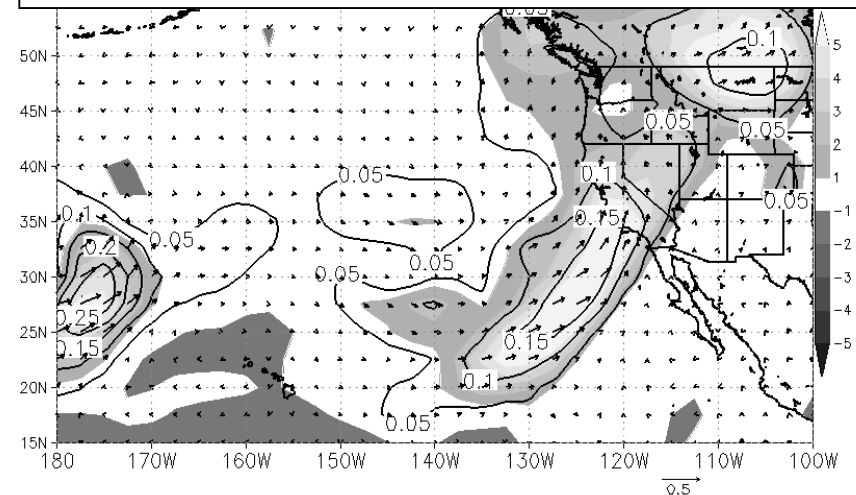
Mar. 9-10, 1995 event

12Z10MAR1995 850hPa Moisture Flux Magnitude (contour, [kg/kg][m/s]),
Normalized Anomaly (shaded, stddev)

1200 UTC 10 Jan 1995



1200 UTC 10 Mar 1995

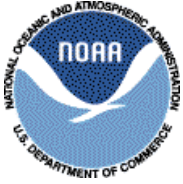


850-hPa Moisture flux (arrows) and normalized moisture flux anomalies (Shaded)



QPF Projects

- Documented use of standardized anomalies at HPC
 - “Assessing QPF Forecast Uncertainty with Standardized Anomalies and Ensemble Guidance at the Hydrometeorological Prediction Center”
 - http://www.hpc.ncep.noaa.gov/mjb/bams/HPC_BAMS_20080708.pdf
- Began investigating decaying tropical cyclones that have convection redevelop at night,
 - Prepared a short training presentation on ingredients to look when contemplating redevelopment
 - Work continues on the Erin Case study.



Collaboration with HMT West

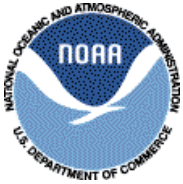
- **Developed an extreme rainfall case library for the HMT west area.**
 - Webpage constructed of 20 heaviest 72-hr precipitation events for HMT West area
- **Assisted HMT West**
 - Provided Excell QPF verification spreadsheet to Marty Ralph on last two seasons
 - Provided Klaus Weickmann with a list of the heaviest 72 hour rainfall event dates so he could construct a plot showing the Global Wind Oscillation and MJO phases for each event.
- **Participated in HMT West calls**
- **HPC worked with Rich Grumm to develop a probability density function (PDF) based on a 30 year climatology of PW and 850 hPa moisture flux for use with normalized anomalies at a specific point in the California Test Bed**
- **Participated in 2007/2008 HMT Advisory Panel Meetings**
- **2007 Assisted in preparations of QPF white paper for the HMT**



Training



- Developed a one hour training presentation on using normalized anomalies in the forecast process which was presented as a seminar to HPC forecasters.
- Documented best practices for QPF at HPC
 - This training is available on HPC Website
- HPC provided training material to NWS training branch to develop a training package on atmospheric rivers and on the use of normalized anomalies to anticipate extreme events.



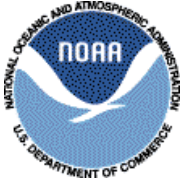
Current Status

- **Staffing**

- One full time contractor
- One FTE 90%
- Significant support from HPC DTB staff

- **Projects**

- Investigation of precipitation near but not directly associated with tropical storms.
 - » Including, but not limited to, PREs.
- Applying GWO phases for storms tracks
 - » Expanding beyond western US
- COMET Training



Future Plans

- **Continue working with HMT-SE**
 - HPC has participated in planning meetings and conference calls
- **Strengthen visiting scientist program**
 - Visitors from academic and science community
 - Forecasters from HPC
- **Continue to seek ways to improve HPC forecasts**